Addressing Data Gaps on Systemic Tail Risk Measures
A Stocktaking of G20 Recommendation 3

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Recommendation #3

"The IMF, in consultation with national authorities, to investigate, develop, and encourage implementation of standard measures that can provide information on tail risks, concentrations, variations in distributions, and the volatility of indicators over time"
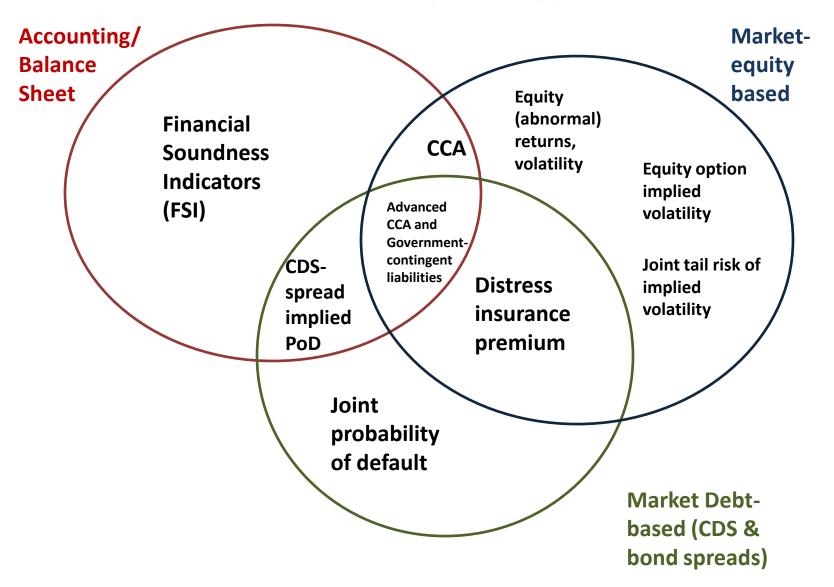
(FSB-IMF Report to the G20 Finance Ministers and Central Bank Governors)

What is Systemic Tail Risk?

- Systemic risk: A risk of disruptions to financial services that is caused by an impairment of all or parts of the financial system, with serious negative consequences for the real economy (IMF-BIS-FSB 2009).

- Systemic *tail* risk: The risk of a rare but plausible event with implications for asymmetrically large losses compared to "normal" times.
  - Usually the probability of the occurrence of the "extreme" event is 5 percent or less
  - Financial institutions have large asset-return correlations with the market during these extreme events

A Taxonomy of Tail Risk Models
Classification by Data Types

Accounting/ Balance Sheet

Market- equity based

Financial Soundness Indicators (FSI)

CCA

Equity (abnormal) returns, volatility

Equity option implied volatility

Advanced CCA and Government- contingent liabilities

CDS- spread implied PoD

Distress insurance premium

Joint tail risk of implied volatility

Joint probability of default

Market Debt- based (CDS & bond spreads)

A Taxonomy of Tail Risk Models
Classification by Function

- **FSIs** – Some (measures of leverage) helped predict which banks would need interventions during crisis

- **Contingent Claims Analysis and Systemic CCA -** measure expected economic loss due to default

- **Advanced CCA -** captures statistical dependence structure of the joint behavior of implicit options for financial sector institutions

- **Distress Insurance Premium** - indicator of systemic risk defined as insurance premium that protects against distressed losses of a portfolio

- **Multivariate Dependence and Equity Options** - calculate tail-risk indicators for individual institutions and between institutions

- **Joint probability of defaults (JPoD), distress dependence and cascade effects**

Comparative Study of Tail-risk Measures

IMF Conducting Staff Study (results anticipated in May/June)

Question: How do various systemic risk measures perform in predicting tail risk?

Evaluation based on

- Whether these measures can inform policy makers of the build-up of systemic risk

- Predicting extreme events (systemic tail-risk)

- Simplicity of metric and data availability